Havok 2
Product Overview

Who's Havok?

- **Real-time physics provider for entertainment:**
  - Games: EA, Microsoft, SEGA, Activision, Sammy, Ion Storm
  - Movies: Swordfish, Matrix Reloaded, Troy, Final Destination 2…
- **115+ games using Havok**
  - Max Payne 2, Deus Ex 2, Starsky&Hutch, Brute Force…
  - In development: PsiOps, HalfLife 2, Thief 3, MOH Pacific Assault, Tribes Vengeance…

Some of our Clients:

Recent games with Havok…

PsiOps

Starcraft Ghost

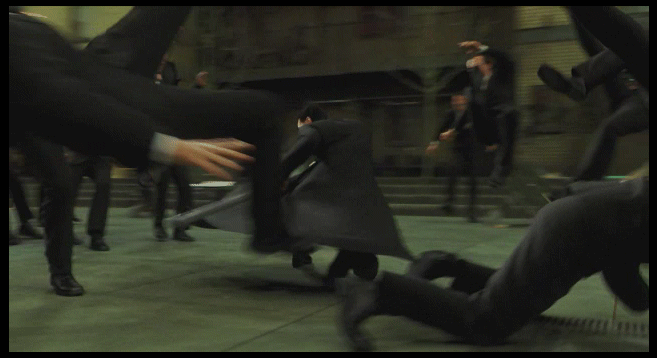
Max Payne 2

Half Life 2

Tribes Vengeance

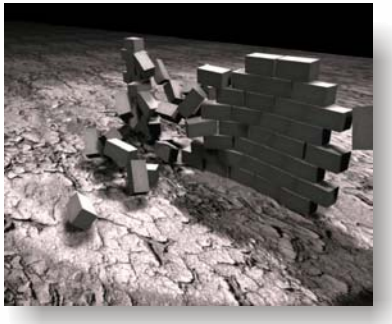
Deus Ex 2

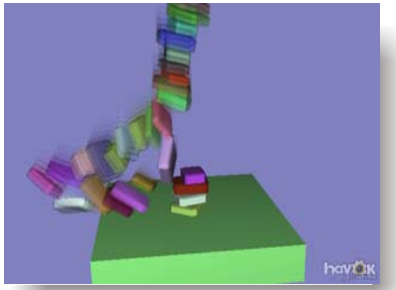
Film SFX (Matrix Reloaded)



What we do …

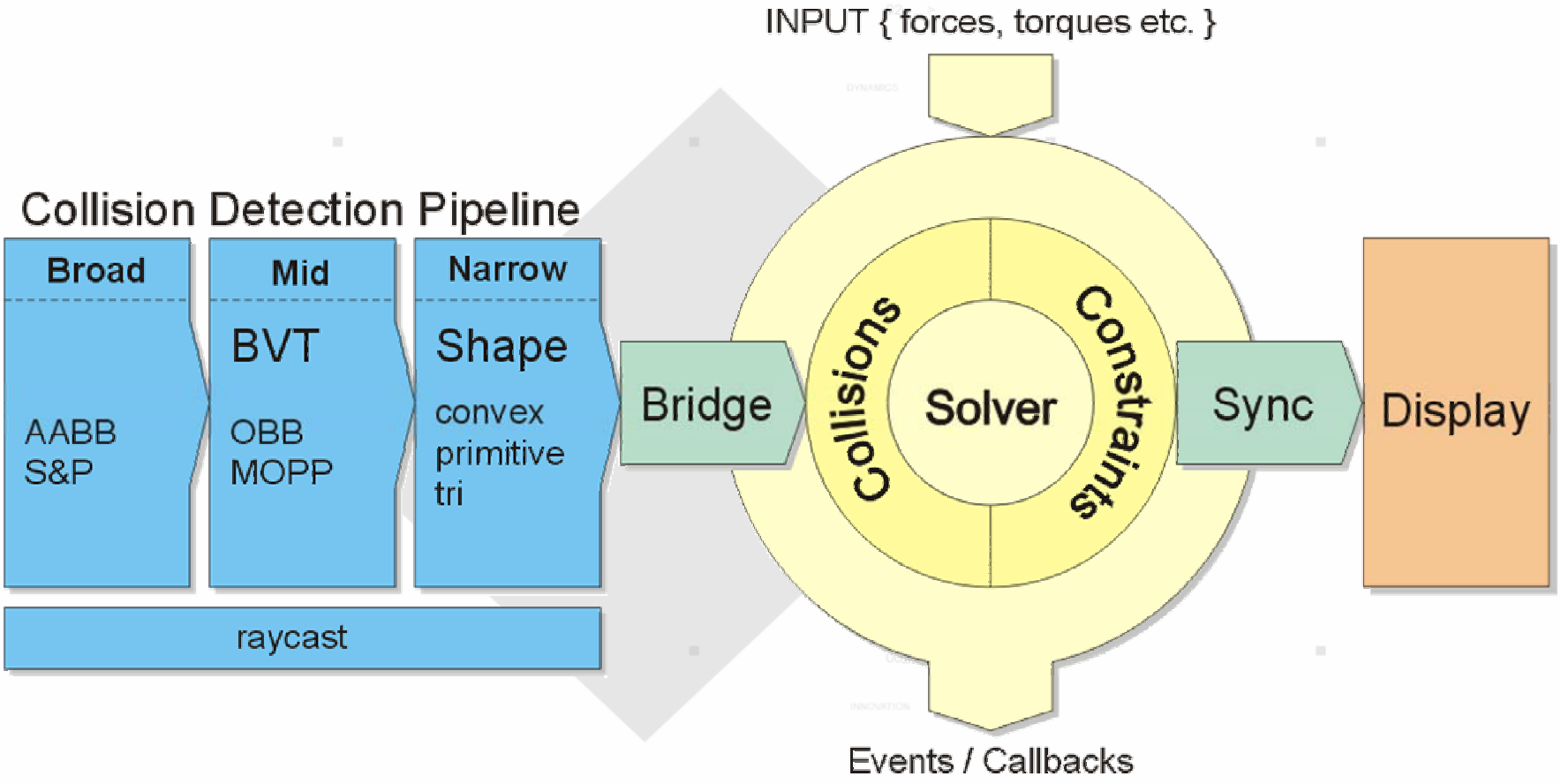
- **Collision Detection:**
  - Multiphase Collision pipeline.
  - Supports AI, sound, decals, frustrum culling
  - Shape casts, ray casts, async queries, landscape/MOPP
- **Rigid Body Dynamics:**
  - Industry's fastest solver
  - Constrained dynamics
- **Ragdoll, Vehicle drop-in features**
- **Character controller:**
  - No geometric restrictions
  - 100% customizable
- **Environmental physics & Special FX**





Now for some movies…

Havok 2 System

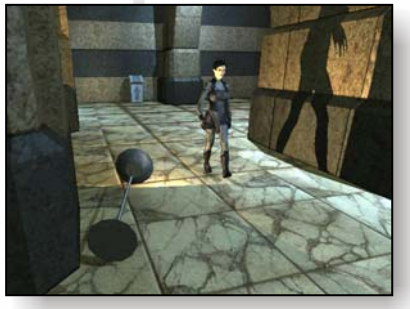


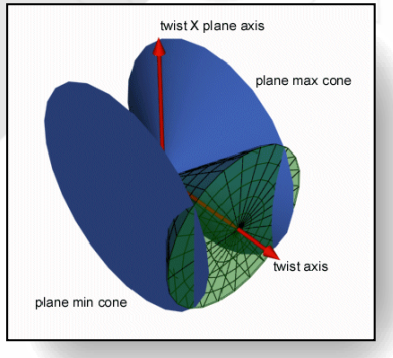
Vehicle SDK

- **Fast per-wheel ray-casting for low CPU:**
- **Car tuning tool.**
  - Real-time on-target parameter tweaking.
  - over 100 parameters
- **Modular with source.**
  - Transmisssion, Engine, Suspension, Aerodynamics, Steering and Gameplay modules.
- **Skidmarks, automated camera support.**
- **Advanced tyre friction model**
- **Supports multiple vehicle classes:**
  - cars, trucks, motorcycles, chariots, trailers etc.

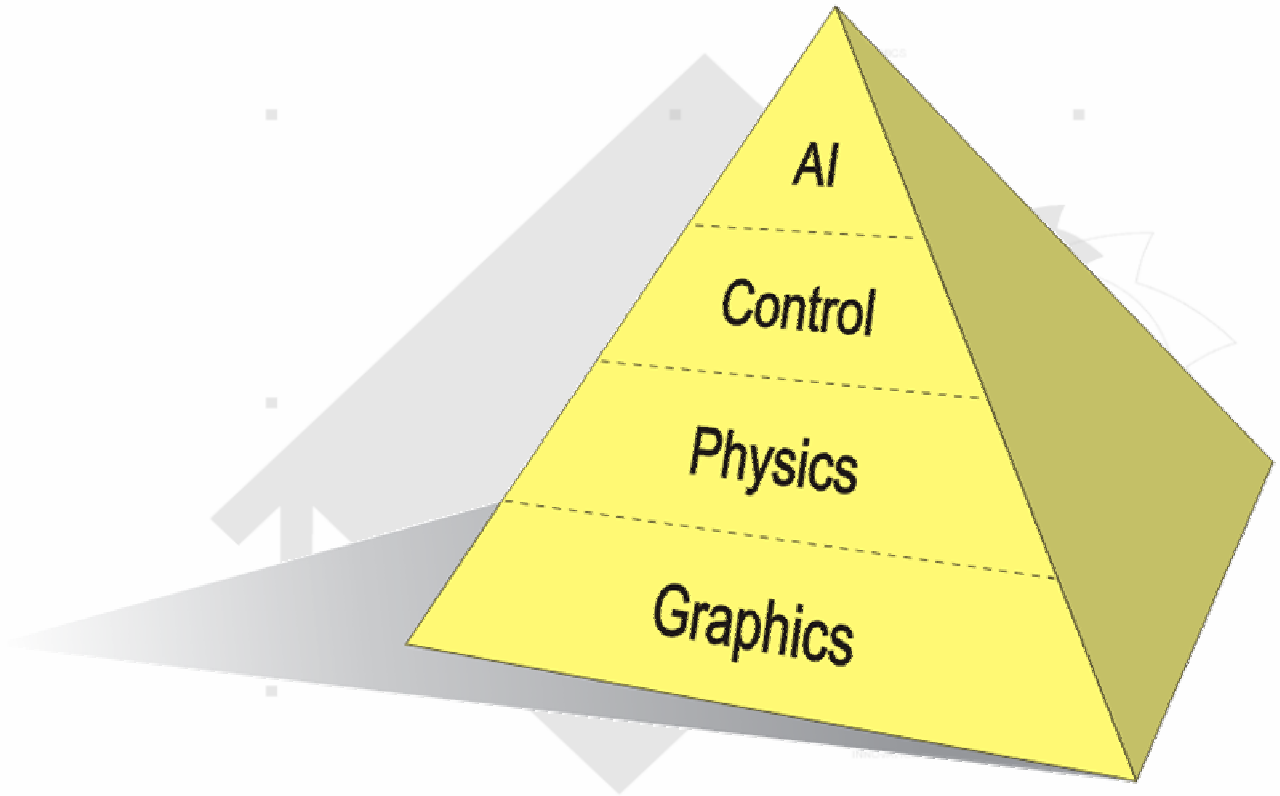
Character Dynamics

- **Ragdoll**
  - Very fast “Virtual stuntmen”
  - No bone configuration restrictions
  - Full integration with rigid body core
  - Tool chain support (Max, Maya)
  - Bone↔RB mapping API
- **Character Controller**
  - Convex shape cast
  - Controllable physics response
  - Asymmetric proxy permitted
  - Template state machine
- **Blend**
  - Physics with key frame / IK
  - Joint motors (for pose targets)
  - Per bone control





Evolution of animation…

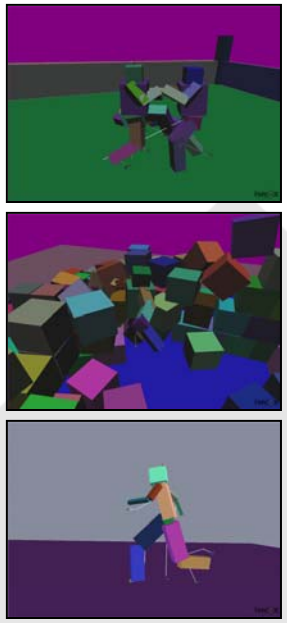


Evolution…

character interaction

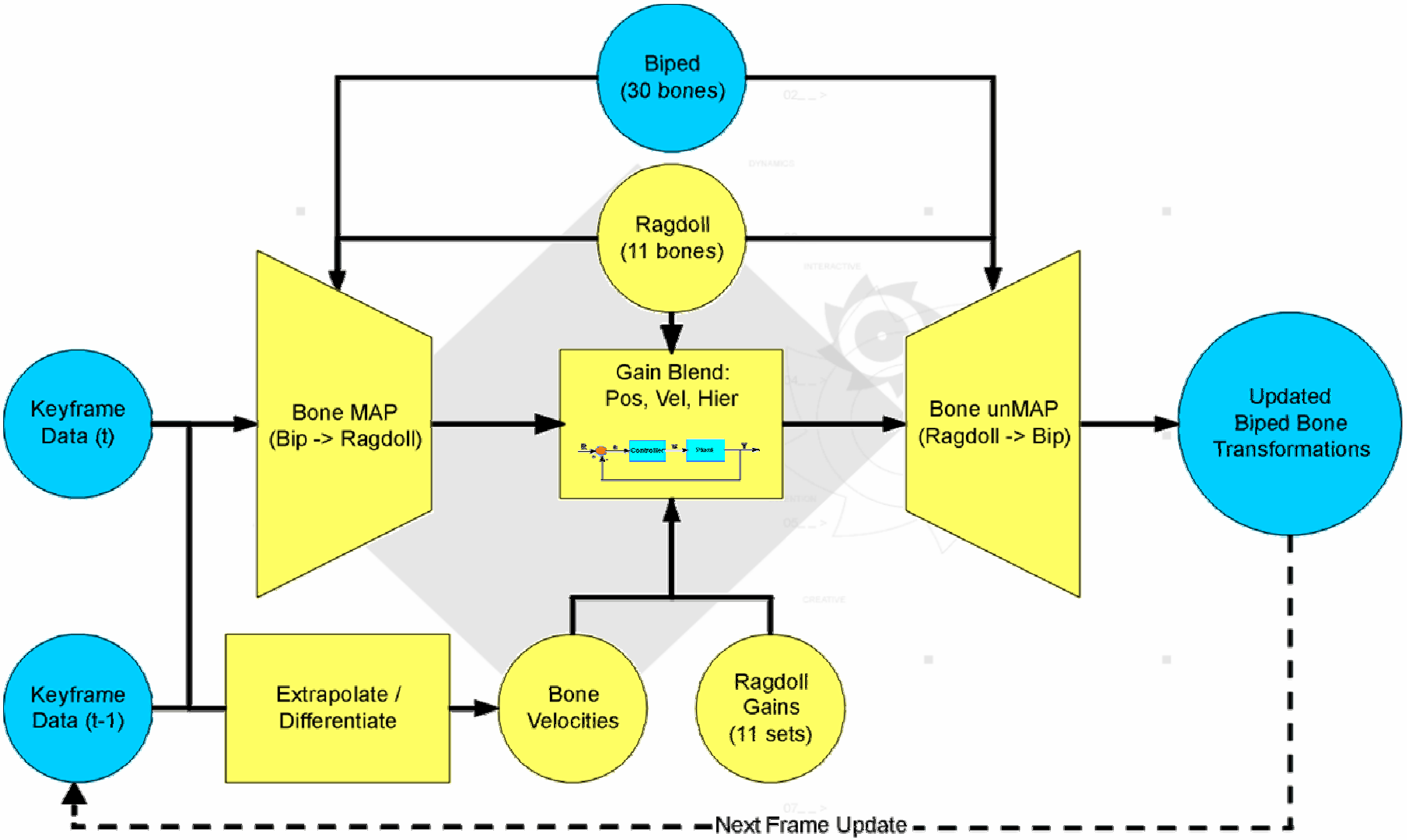
environment interaction

physical keyframing



- **Seamless transitions to rag doll**
- **Secondary motion for blend system**
  - morph targets or direct manipulation with feedback controller
- **Inertial Inverse Kinematics**
  - full collision constraint system

Havok character update loop



Questions?